REMARKS

Claims 1-8 are all the claims pending in the application.

Rejection Under 35 U.S.C. § 102(b)

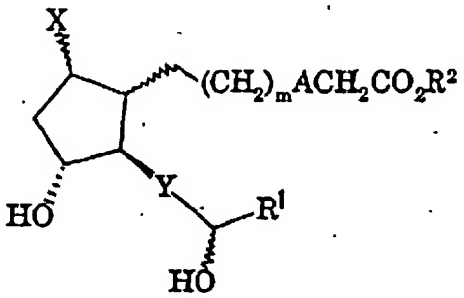
Claims 1-8 were rejected under 35 U.S.C. § 102(b) as being anticipated by the following foreign publications: EP 510154, JP 7-285929, WO 95/18101, WO 95/06634-A1, or WO 94/08959-A1.

In order for a reference to anticipate claims 1-8, the reference must disclose each and every element of the claimed prostaglandin derivatives and the pharmaceutical preparation comprising the prostaglandin derivatives.

However, the compounds disclosed in the cited references are quite different from the present compounds as explained below.

Feature of the present invention

The present invention is related to prostaglandin (PG) derivatives of formula (I).



(I)

m is 0, 1 or 2,

A is a group represented by the formula:

$O(CH2)_n$,

$S(0)_p(CH2)_n$,

$O(CH_2)_qO(CH_2)_r$,

$O(CH_2)_qS(0)_p(CH_2)_r$,

$S(O)_p(CH_2)_qS(O)_p(CH_2)r$ or

$S(O)_p(CH_2)_qO(CH_2)_r$

(where n is an integer of 1 to 5,

p, q and r are as defined in the specification).

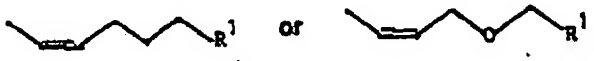
The PG derivatives have PGD_2-like agonistic activity and sleep-inducing action.

The advantageous efficacy of the present compounds is demonstrated by comparing their PGD_2-like action with the action of PGD_2 per se using the ability to promote cAMP production as an index (See Table 1 on page 51 of the specification of the subject application).

As is clear from Table 1, the present compounds have unexpectedly strong PGD_2-like agonistic activity (such as sleep-inducing action) compared with native PGD_2, although the present compounds do not have the cis-double bond in the α-chain which is the structure peculiar to PGD_2 derivatives.

Comparison of the Present compounds with the compounds disclosed in EP 510154

EP 510154 discloses compounds that have as the α-chain:



(R^1 is CH_2OH or ) and that have PGD_2-like agonistic activity.

The compounds of EP 510154 have the cis-double bond in the α-chain which is the structure peculiar to PGD_2 derivatives.

On the other hand, the present compounds have no cis-double bond in the α-chain.

Furthermore, $-CH_2-C=C-CH_2-$ in the compounds of EP 510154 is different in the number of carbon atoms from $-CH_2-(CH_2)m-$ (m is 0, 1 or 2) in the present compounds.

In the compounds of EP 510154, the carboxyl group at the end of the α-chain and O is interrupted by a methylene chain having one carbon atom.

In the present compounds, in contrast, when A is represented by the formula $O(CH_2)_n$, n is one or more and the carboxyl group at the end of the α-chain and O is interrupted by an alkylene chain having at least two carbon atoms.

In chemistry, it is generally difficult to predict the action and affect (efficacy) of a certain compound solely from its chemical structure even if the actions of compounds having similar structures are known. This is particularly true not only in the field of steroids but also in the field of prostaglandins contemplated by the present invention and as is very often the case, the action or effect (efficacy) of compounds varies considerably depending on the presence of or coordination with one methyl group, the addition or deletion of one methylene group, or the presence of a double bond.

In spite of the above structural differences, the present compounds have the PGD_2-like agonistic activity as do the compounds of EP 510154 and this is entirely unexpected and, hence, unobvious from EP 510154.

Comparison of the present compounds with the compounds disclosed in JP 7-285929, WO 95/18101, WO 95/06634 and WO 94/08959

JP 7-285929, WO 95/18101, WO 95/06634 and WO 94/08959 merely disclose prostaglandin derivatives that have as the α-chain, $(CH_2)_4OCH_2COOR_1$, $(CH_2)_4SCH_2COOR_1$, $(CH_2)_4XCH_2C00R_1$ or $(CH_2)_4OCH_2COOR_1$, respectively.

In the compounds disclosed in the above references, the carboxyl group at the end of the α-chain and O or S is interrupted by a methylene chain having one carbon atom.

In the present compounds, in contrast, when A is represented by the formula $O(CH_2)_n$ or $S(O)_p(CH_2)_n$, n is one or more, the carboxyl group at the end of the α-chain and O or S is interrupted by an alkylene chain having at least two carbon atoms.

Furthermore, $-(CH_2)_4-$ in the compounds disclosed in the citations is different in the number of carbon atoms from $-CH_2-(CH_2)_m-$ (m is 0, 1 or 2) in the present compounds.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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